

PATENT SPECIFICATION

DRAWINGS ATTACHED

1039,552

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Date of Application and filing Complete Specification Feb. 4, 1964.

No. 4716/64.

Application made in United States of America (No. 298134) on July 29, 1963.

Complete Specification Published Aug. 17, 1966.

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Index at acceptance: —F2 A(4, 5B1, 5B5, 5C1, 5C4, 20)

Int. Cl.: —F 06 c

COMPLETE SPECIFICATION

Improvements in and relating to Bearings

We, THE MINSTER MACHINE COMPANY, a Corporation organised and existing under the laws of the State of Ohio, United States of America, of Minster, Ohio, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to bearings and is particularly concerned with bearings for supporting relatively movable members embodying the advantages of rolling bearings comprising rolling bearing elements such as balls or rollers with regard to low friction and sliding or plain bearings with regard to load carrying capabilities.

In a great many arrangements where bearings are employed, the type of service is such that the loading on the bearing is of a variable or intermittent nature, being relatively high at one time and relatively low at another time. When bearing loading is relatively low, the relatively movable parts between which the bearing is placed could be supported on bearings comprising rolling bearing elements such as balls or rollers and herein referred to generally as roller bearings, so that there would be free movement of the parts relatively without resistance on account of the drag in the bearing. When bearing loading is high however, rolling bearings deteriorate rapidly because their low friction characteristics are realised by greatly reducing the area of contact between the rolling bearing elements and the relatively movable parts. This is done by utilising rollers or balls and the use of these elements results in substantially line or substantially point contact and when bearing loading becomes high, the stress on such bearing elements and the parts which they engage become extremely high and this occasions the deterioration and

short life of the bearings under heavy load conditions.

In addition to the low friction characteristics of rolling bearings when used in combination with bearings having plain or sliding bearing elements, herein referred to generally as sliding bearings, the rolling bearings support the relatively movable members in accurately relatively located positions thereby providing a space between the surfaces of the sliding bearing elements for receiving an oil film. This has a great advantage, particularly where oil wedge type sliding bearings are employed and where the oil film pressure is developed by relative motion between the sliding bearing surfaces. When the oil film is developed by the relative motion of the surfaces of the sliding bearing, there may be no oil film when the parts are not in motion, and this can lead to direct metal to metal contact causing wear on sliding bearing surfaces. The combination of the rolling bearing according to the present invention prevents such metal to metal contact.

With sliding bearings such as shaft bearings or gibs having flat surfaces and the like extremely high bearing loading can be carried because the bearing elements present a large surface and the unit stresses in the surface of the bearing elements are maintained low. These bearings, however, necessarily have considerable drag even though an oil film is maintained between the relatively moving surfaces.

A particular service in which rolling bearings are defective is wherever shock loading arises. With shock loading there is a great tendency for a condition known as "Brinelling" to occur in which small areas of the surfaces engaged by the rolling bearing elements are deformed and work-hardened so that deterioration of the bearing is extremely rapid.

With the foregoing in mind, a primary

[Price 4s. 6d.]